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10/648,832	08/27/2003	Robert Arnold	449122056800	3925

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EXAMINER	
GREY, CHRISTOPHER P	
ART UNIT	PAPER NUMBER
2616	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/648,832	ARNOLD ET AL.	
	Examiner	Art Unit	
	CHRISTOPHER P. GREY	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Dec 28, 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,8-12 and 15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,8-12 and 15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 5, and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mckee et al. (US 5477531), hereinafter referred to as Mckee in view of Prarie et al. (US 6834139), hereinafter referred to as Prairie.

Regarding claim 1, Mckee discloses a test method for a message path existing between a first device and a second device **(fig 1, 11 and 12)**,

the first device and the second device being connected via a communication network **(see communication network depicted in fig 1)**

and the communication between the first and the second device being effected by messages of a first protocol layer **(Col 4 lines 3-16, ICMP protocol),** and , the unmodified transmission of said messages in the communications network being effected by a second protocol layer subordinate to the first protocol layer **(Col 3 lines 45-63, where 802.2 link level protocol indicated the communication of the devices connected through the network via another lower level protocol),** wherein the messages of the first protocol layer are sent by the first device to the second device at short time intervals **(Col 7 lines 3-6, each test packet is sent at time intervals)**

and the address of the first device according to the first protocol layer being selected both as a send address and as a receive address for said test messages **(Col 5 lines 16-19, where identifying the remote station for loopback testing, indicates that the sending device transmits the test packets, and also receives the loopback packets, therefore it is both the sender and destination; Mckee also depicts a list of the transmission of test packets, where an ID/address indicates the transmission tx and reception rx of test packets at the testing device fig 2).**

Mckee does not specifically disclose wherein in the case of a redundant connection having multiple message paths between the first device and the second device, which is formed by the said communications network and at least one further communications network, separate interfaces of the first device host being linked to the respective redundant communications networks and crosslinks being provided between the redundant communications networks, all message paths are tested and separately marked as faulty if faults are present. Mckee also does not specifically disclose wherein that at least one interface is marked as active and used for the transmission of user data and at least one further interface is marked as a standby and is not used for the transmission of user data, and the standby interface is activated and user data is henceforth transmitted via a standby interface and a message path associated with the standby interface as soon as all message paths associated with the active interface are marked as temporarily or permanently faulty.

Prairie discloses wherein in the case of a redundant connection having multiple message paths between the first device and the second device **(fig 3, node A and node B in communication via several message paths as shown)**, which is formed by the said

communications network **(fig 3, where the communication between port 302 and 308 is equivalent to a communications network)** and at least one further communications network **(fig 3, where the communication from port 304 to/from 306 is equivalent to a further communication network)**, separate interfaces of the first device host **(fig 3, where the ports of node A are equivalent to interfaces)** being linked to the respective redundant communications networks **(applicant does not specify a respective redundant network previous to this statement, and it is unclear to the examiner based on the language of the claim what networks are being claimed, thus the claimed subject matter is open for broad interpretation)** and crosslinks being provided between the redundant communications networks **(fig 3, where node A and node B are crossconnects, where node A and B are considered apart of the redundant communication network, as redundant connections allow communications b/w these nodes, thus the links connecting Node A and Node B are equivalent to cross links)**, all message paths are tested **(Col 5 lines 20-23, notice link verification is repeated for each link)** and separately marked as faulty if faults are present **(Col 6 lines 47-49, miswiring indicates a fault is present).**

It would have been obvious to one of the ordinary skill in the art at the time of the invention was disclosed to modify the communication devices of Mckee, as taught by Prairie, since stated in Col 2 lines 3-12, that such a modification will allow for verification of port connectivity.

The combined teachings of Mckee and Prarie do not specifically disclose wherein that at least one interface is marked as active and used for the transmission of user data and at least one further interface is marked as a standby and is not used for the transmission of user data, and the

standby interface is activated and user data is henceforth transmitted via a standby interface and a message path associated with the standby interface as soon as all message paths associated with the active interface are marked as temporarily or permanently faulty.

Kuo discloses wherein that at least one interface is marked as active and used for the transmission of user data **(Col 6 lines 1-4 and fig 1, 118 where each switch represents an interface)** and at least one further interface is marked as a standby and is not used for the transmission of user data **(fig 1, 120, notice a stanby device is shown)**, and the standby interface is activated and user data is henceforth transmitted via a standby interface **(the name standby indicates that this device becomes active when a primary device goes down)** and a message path associated with the standby interface as soon as all message paths associated with the active interface are marked as temporarily or permanently faulty **(Col 6 lines 35-41, where standby switches are used as redundant routes in the event of an inoperative active master switch).**

It would have been obvious to one of the ordinary skill in the art at the time of the invention was disclosed to modify the combined teachings of Mckee and Prairie as taught by Kuo, since stated in Col 1 lines 17-22, that such a modification will allow for route redundancy.

Regarding Claim 5, Mckee discloses wherein the messages of the first protocol layer are sent by the first device to the second device at short time intervals **(Col 7 lines 3-6, each test packet is sent at time intervals)** and the address of the second device according to the first protocol layer being selected both as a send address and as a receive address for said test messages **(Col 5 lines 16-19, where identifying the remote station for loopback testing, indicates that the tested device receives the test packets, and also transmits the loopback packets, therefore it**

is both a destination and transmitter, fig 2, 32, where the packet ID indicated the ID of the given receivers and transmitters in the loopback communication).

Regarding Claim 8. The combined teachings of Mckee and Prarie do not specifically disclose wherein the second device is also configured redundantly in that at least one third device is provided (fig 2, 106 provides redundancy for 104), which takes over the function of the second device in the event of the latter's failure (fig 1, 106 is deemed a backup and takes over from 104 in the even that it is inoperative), the communication of the first device basically being routed to the second device as long as the second device can be reached via a message path associated with one of the interfaces and not being routed to the third device until and unless all message paths between the first and the second device are faulty.

Kuo discloses wherein the second device is also configured redundantly in that at least one third device is provided **(fig 2, 106 provides redundancy for 104),** which takes over the function of the second device in the event of the latter's failure **(fig 1, 106 is deemed a backup and takes over from 104 in the even that it is inoperative)**, the communication of the first device basically being routed to the second device as long as the second device can be reached via a message path associated with one of the interfaces and not being routed to the third device until and unless all message paths between the first and the second device are faulty **(backup or standby is known in the art to take over in the event that communication can no longer exist in the primary device).**

It would have been obvious to one of the ordinary skill in the art at the time of the invention was disclosed to modify the combined teachings of Mckee and Prairie as taught by Kuo, since stated in Col 1 lines 17-22, that such a modification will allow for route redundancy.

Regarding Claim 9, The combined teachings of Mckee and Prairie do not specifically disclose wherein if all message paths between the first and the second device are faulty and the communication is routed to the third device said communication is immediately routed to the second device as soon as one of the faulty message paths between the first and second device is available once more.

Kuo discloses wherein if all message paths between the first and the second device are faulty and the communication is routed to the third device said communication is immediately routed to the second device as soon as one of the faulty message paths between the first and second device is available once more **(Kuo discloses failover, Col 5 lines 30-32, where one skilled the art at the time of the invention knows that there are several methods and procedures available to provide failback, which involves switching back to the master in the event that the connection is restored and operative).**

Regarding Claim 10, Mckee discloses wherein the communications networks are based on protocol layer 2 of a protocol hierarchy **(Col 3 lines 60-63)** and the first, second and third device exchange or switch messages, datagrams or packets of protocol layer 3 of the protocol hierarchy **(Col 4 lines 3-16, ICMP protocol, IP, the protocol stacks may be of any form suitable for the particular links to which the corresponding stations are connected).**

Regarding Claim 11, Mckee discloses wherein the communications networks are local area networks LAN and transfer or switch user data in accordance with the Ethernet protocol **(Col 3 lines 31-33, packet based communications network equivalent to Ethernet and Col 3 lines 60-64, IEEE 802.2)** and the first second and third device exchange or switch user data in accordance with the internet protocol IP **(Col 4 lines 3-16, ICMP is IP, see Col 1 lines 23-30).**

5. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mckee et al. (US 5477531), hereinafter referred to as Mckee in view of Prarie et al. (US 6834139), hereinafter referred to as Prairie in view of Kahkosha et al. (US 6002671) hereinafter referred to as Kahkosha.

Claim 2 Mckee discloses a first test message that, in the fault free case, is immediately sent back to the first device by the second device on account of the chosen receive address (hence loopback disclosed in the rejection of claim 1)

Mckee does not specifically disclose wherein the message path is marked as at least temporarily faulty if, within an appropriate period of time, the first device does not receive a first test.

Kahkosha discloses wherein the message path is marked as at least temporarily faulty if, within an appropriate period of time, a first test is not received by the first device **(Col 6 lines 6-14, where the display of an error message indicates fault).**

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the testing method as disclosed by Mckee, so as to use and implement a timer in the testing apparatus, that would assist in monitoring the receipt of a loopack message, where upon no receipt of the message within a specified period of time, and indication of error would result as disclosed by Kahkosha. The motivation for this modification is to continue to retest the connection in the event that there is only a temporary fault.

Claim 3 Mckee does not specifically disclose wherein the message path is marked as permanently faulty if, within an appropriate period of time, a predeterminable number of further test messages are not received by the first device.

Kahkosha discloses wherein the message path is marked as permanently faulty if, within an appropriate period of time, a predeterminable number of further test messages are not received by the first device **(Col 6 lines 6-14, the error message received after the first error message is equivalent to a permanently fault marking, or fermentation because of a communication failure).**

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the testing method as disclosed by Mckee, so as to use and implement a timer in the testing apparatus, that would assist in monitoring the receipt of a loopack message, where upon no receipt of the message within a specified period of time, and indication of error would result as disclosed by Kahkosha. The motivation for this modification is to recognize that after a number of retests are performed without being successful, the connection is deemed to be inoperable or permanently faulty.

Claim 4 Mckee does not specifically disclose wherein a message path marked as permanently faulty continues to be tested using the test messages and the marking of this messages path as faulty is canceled if the end of the fault is established by the first device owing to the receipt of the test message.

Kahkosha discloses disclose wherein a message path marked as permanently faulty continues to be tested using the test messages and the marking of this messages path as faulty is canceled if the end of the fault is established by the first device owing to the receipt of the test message **(Col 6 lines 6-14, and fig 3a 206, where when an ARP response is received no error message is displayed).**

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the testing method as disclosed by Mckee, so as to use and implement a timer in the testing apparatus, that would assist in monitoring the receipt of a loopack message, where upon no receipt of the message within a specified period of time, and indication of error would result as disclosed by Kahkosha. The motivation for this modification is to recognize that after a number of retests are performed without being successful, the connection is deemed to be inoperable or permanently faulty.

3. Claims 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prarie et al. (US 6834139), hereinafter referred to as Prairie in view of Finney (ET AL. (US 5712856), hereinafter referred to as Finney, in further view of Kuo et al. (US 7209435), hereinafter referred to as Kuo.

Claim 12 Prarie discloses a network element that is connected by a connection network to at least one further network element **(fig 3, where node A is connected to node B)**, multiple message paths **(fig 3, where multiple paths exist and can be seen connecting nodes A and B)** existing between the network element and the further network element owing to the structure of the connection network and the data exchanged between the network elements being switched through the connection network unmodified, wherein the network element **(fig 3, node A and node B connected via some network, where several network paths exists can be seen from the connection of the different ports shown between the nodes);**

Generates test messages related to the message paths, said messages being sent back immediately on account of their properties by the further network element to the network

element **(Col 5 lines 52-55 and Col 5 lines 33-36, where loopback indicates immediately sending back test message),**

Sends the test messages to the further network element via the message paths, and receives the test messages on all message paths **(Col 5 lines 20-24, link verification is repeated for each port).**

Praire does not specifically disclose wherein the network element determines a faulty message path responding to a configurable number of test messages lost on this message path, the network element for determining the loss of test messages per message path having timers, the expiry of which signals the loss of a test message, the timer being initialized by a value corresponding to the maximum permissible signal transit time on the connection network and being started by the transmission of the test message, and the timer being stopped by the correct reception of the test message and wherein the network elements reroutes the user data traffic to a message path of next lower priority in the event of a fault on the higher priority message path

Finney discloses wherein the network element determines a faulty message path **(Col 4 lines 35-36, error has occurred)** responding to a configurable number of test messages lost on this message path (where only one message needs to be sent) , the network element for determining the loss of test messages per message path having timers **(Col 4 lines 27-34)**, the expiry of which signals the loss of a test message **(Col 4 lines 7-12, error if not received within a predetermined time interval and Col 4 lines 57-58)**, the timer being initialized by a value corresponding to the maximum permissible signal transit time on the connection network and being started by the transmission of the test message, and the timer being stopped by the correct reception of the test message **(Col 4 lines 26-33 and Col 4 lines 57-58)**.

It would have been obvious to one of the ordinary skill in the art at the time of the invention was disclosed to modify the testing method of Prairie as taught by Finney, since stated in the abstract that such a modification will ensure that the link is correctly transmitting data.

The combined teachings of Prairie and Finney do not specifically disclose wherein the network elements reroutes the user data traffic to a message path of a next lower priority in the event of a fault on the higher priority message path used up to that point **(note that Finney does state in Col 5 lines 32-37 that if an error is determined on a link, other channels can still be used to send messages).**

Kuo discloses wherein the network elements reroutes the user data traffic to a message path of a next lower priority in the event of a fault on the higher priority message path used up to that point **(Col 6 lines 35-41, redundant routes in the event that switch becomes inoperative and Col 6 line 66-Col 7 line 15).**

It would have been obvious to one of the ordinary skill in the art at the time of the invention was disclosed to modify the combined teachings of Mckee and Finney, as taught by Kuo, since stated in Col 5 lines 22-34, that such a modification would provide for failover in the event of a fault.

Regarding Claim 15, The combined teachings of Prairie and Finney do not specifically disclose wherein the network element determines the end of the fault on a message path responding to the renewed reception of test messages, and reroutes the user data traffic to the message path of next higher priority responding to the end of the fault.

Kuo discloses wherein the network element determines the end of the fault on a message path responding to the renewed reception of test messages, and reroutes the user data traffic to

the message path of next higher priority responding to the end of the fault **(Col 6 lines 65-66, where priority determines master and backup, where in the event that an original master is restored to its high priority level, it is determined to retake the master role. Furthermore, failback is well known and employed in the art).**

It would have been obvious to one of the ordinary skill in the art at the time of the invention was disclosed to modify the combined teachings of Mckee and Finney, as taught by Kuo, since stated in Col 5 lines 22-34, that such a modification would provide for failover in the event of a fault.

Response to Arguments

4. In response to the applicant's arguments filed on Dec 28, 2007:

(a) The applicant argued that the cited art does not teach separate interfaces of the first device host being linked to the respective redundant communication network.

The examiner maintains that the cited art discloses the claimed subject matter interpreted within its broadest sense, wherein Prairie discloses separate interfaces of the first device host **(fig 3, where the ports of node A are equivalent to interfaces)** being linked to the respective redundant communications networks **(applicant does not specify a respective redundant network previous to this statement, and it is unclear to the examiner based on the language of the claim what networks are being claimed, thus the claimed subject matter is open for broad interpretation).**

(b) The applicant argues on page 7 lines 10-20, that Kuo does not specifically disclose claimed limitations, but it is clear from the rejection of claim 1 above, that cited portions

of Mckee and Prairie are used to reject these limitations, and the applicant does not make mention of why these references do not cover the claimed limitations. Furthermore, Kuo is used in order to show that the combined teachings of Mckee and Prairie, may be modified, wherein the multiple paths connected by the different ports of the two devices Node A and B, may be employed redundantly, where an active and standby path are achievable through modification. This modification allows data to constantly flow in the event of a fault, thereby avoiding congestion.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER P. GREY whose telephone number is (571)272-3160. The examiner can normally be reached on 10AM-7:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Moe Aung can be reached on (571)272-7314. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Christopher P Grey
Examiner
Art Unit 2616

/Aung S. Moe/

Supervisory Patent Examiner, Art Unit 2616